



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 1

Baird & McGuire Superfund Site

COCHATO RIVER MONITORING UPDATE

The U.S. Environmental Protection Agency (EPA) has been working since the early 1980s to address contamination at the Baird & McGuire Superfund Site in Holbrook, MA. This is an update on recent EPA activities to address post-clean-up monitoring activities in the Cochato River and adjacent wetlands.

What's the latest on the monitoring program for the Cochato River? Since the clean-up of the Cochato River sediments was completed in 1995, monitoring of the river has shown that contaminants are decreasing. (Table 1 shows the overall trends.) EPA created this update to tell you more about the continued monitoring of the sediment, riverbank soil, and fish quality in the Cochato River and the downstream wetlands.

We've also provided a short description of past activities at the site and a brief overview of the clean-up activities that have occurred. Finally, we'll sum up the current and historical monitoring data for the riverbank soils, sediment, and fish in the Cochato River and Sylvan Lake.

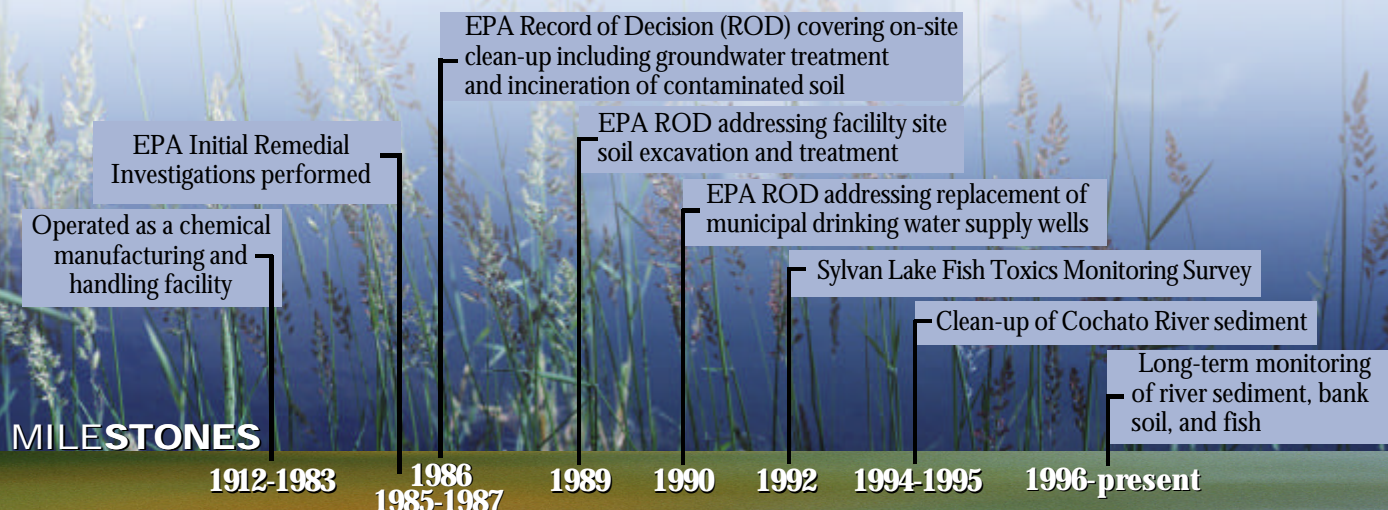
Table 1. Apparent temporal response of contaminants in sediment/soils collected along the Cochato River from 1996 to 1999.

Station	Station Description	Arsenic	Total DDT	Total Chlordane	Total PAH
A	Control	≈	≈	≈	≈
B	Between Union St. and Center St.	≈	≈	≈	≈
C	Ice Pond, River	↓	↓	↓	↓
C	Ice Pond, Bank	≈	↓	↓	↓
D	Mary Lee Wetlands, River	↓	↓	↓	↓
D	Mary Lee Wetlands, Bank	↓	↓	↓	↓

Legend: ≈ Levels relatively constant over time ↓ 1999 values decreased since 1996

History of the Site in a Nutshell

The Baird & McGuire Superfund Site was a chemical manufacturing and handling facility from 1912 to 1983. It manufactured products such as herbicides, pesticides, disinfectants, soaps, and solvents. Baird & McGuire's past storage and disposal practices resulted in contamination of the site soils, downstream waterways, and fish. EPA has been involved in the site since the facility was shut down in 1983 and has significantly cleaned up the site since that time. Besides the dredging and treatment of over 4,000 cubic yards of sediments in the Cochato, the on-site contaminated soils were treated by incineration, and the groundwater is currently being treated by an on-site treatment plant.



Current Monitoring Activities

To make sure that the Cochato River clean-up remains protective of human health, EPA has a long-term monitoring program where we collect and analyze the sediment, riverbank soils, and fish from the Cochato River, its downstream wetlands, and Sylvan Lake. The data collected from these monitoring events have been compared with what we call the “Program Action Limits,” or PALs. These PALs are conservative chemical concentrations that are designed to protect a child because children are the most sensitive to adverse effects from contamination. The PALs for fish that are caught and consumed by people were developed to be equal to the action levels set by the Food and Drug Administration. Because PALs were not available for all but one of the different PAHs tested for in the fish, we used the PAL for just one PAH, benzo(a)pyrene, as the PAL for all the different PAHs combined. As a result, the PAL for total PAHs was much lower than if we had PALs for all the specific PAHs that were analyzed. Using the PAL for benzo(a)pyrene, the most harmful of the PAHs, was the most conservative path we could take towards protecting human health and the environment.

The results of the monitoring and comparison to the PALs will be used to answer:

- Are the levels of contaminants in the sediments, riverbank soils, and fish in the Cochato River and the downstream wetlands decreasing over time?
- If the levels of contaminants are decreasing, are they decreasing everywhere or just in certain locations?
- Are the riverbank soils and river sediment contaminant concentrations below the PALs?
- Are the contaminant concentrations in the fish below the PALs?

At each location, samples were taken of the sediment at the river bottom and of as many species of fish as could be found in the area. In addition, soil samples along the riverbank were taken at downstream locations. We also collected samples of fish from Sylvan Lake because sampling conducted by the Massachusetts Department of Environmental Protection (MADEP) in 1992 showed that some fish were contaminated with chemicals related to the site. (See Figure 1 for a map of the collection locations.)

Samples have been collected for the following chemicals: arsenic, polynuclear aromatic hydrocarbons (PAHs), DDT, and chlordane. These chemicals were chosen because they were most commonly found in the Cochato River and pose the greatest risk to human health and the environment.

Where Exactly Are the Samples Being Collected?

Figure 1 shows the long-term monitoring program sample collection areas along the Cochato River. These sites are:

Site A	Background location upstream of the site
Site E	Location within the site boundaries (1999 only)
Site B	Location at the intersection of Union Street
Site C	Downstream location in Ice Pond
Site D	Downstream location in the Mary Lee Wetlands
SL	Sylvan Lake for fish collection



Monitoring Study Results and Overall Trends

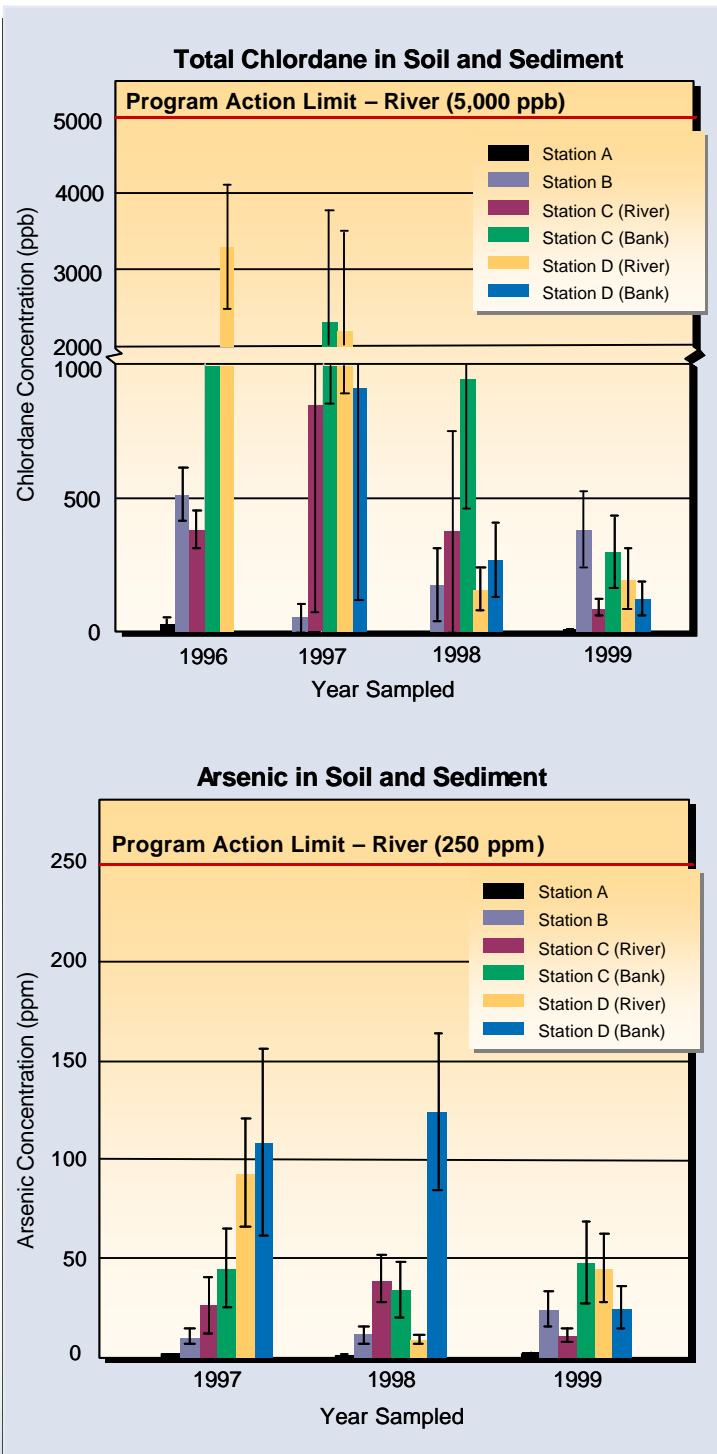
The results from previous monitoring events after the site clean-up are available from 1996 to 1999 for sediments and riverbank soils and were used to evaluate the overall trends. Fish samples were collected the first year after the clean-up in 1996, and also in 1999 and 2000. The most recent monitoring data from the 2000 sampling were not available at this time, but fish data from the 1992 sampling event in Sylvan Lake collected by MADEP were available. Therefore, the trends in fish contaminant concentration have been compared for the years 1992, 1996, and 1999, and the trends in sediment and riverbank soils have been compared for the years 1996 through 1999.

Sediment and Riverbank Soil Trends

In general, concentrations of contaminants in river sediments and bank soils collected in the Cochato in 1999:

- Were 50-90% lower than sediment PALs within the site boundaries;
- Were lowest within the site boundaries (Site E)
- Were lower or at the same level than the 1996 -1998 concentrations;

Figures 2 and 3 are examples of the trends observed over time at each sampling location for two representative contaminants—Figure 2 represents total chlordane and Figure 3 represents arsenic.

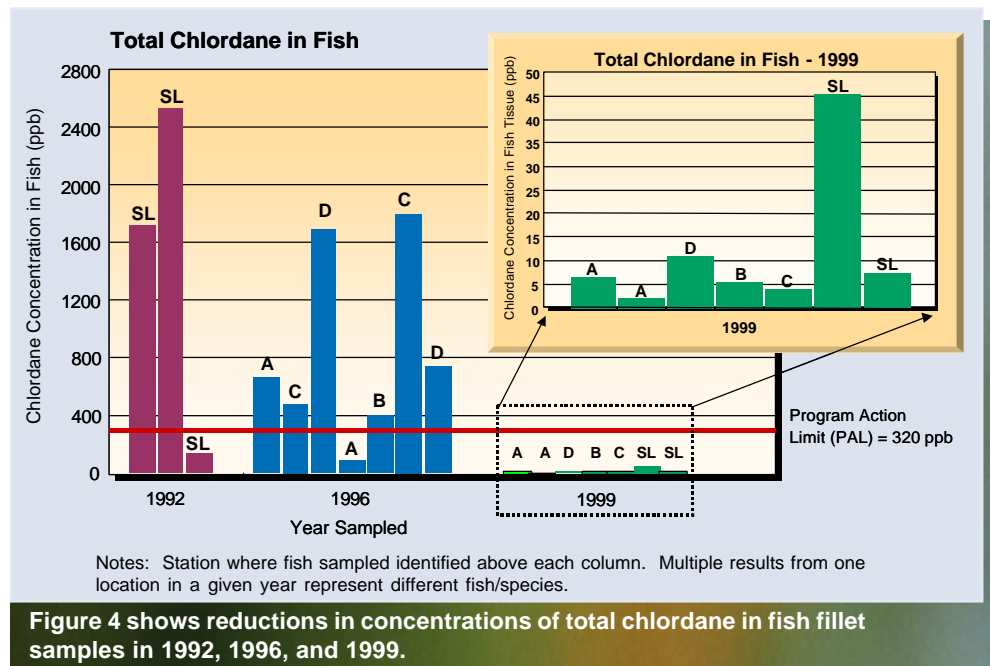


Figures 2 and 3 show reductions in concentrations of total chlordane and arsenic in sediment samples collected along the Cochato River from 1996 to 1999 (error bars represent the standard error of the mean of multiple composites taken at each sampling location).

Fish Tissue

When we compared the 1999 fish results to the historic data, we found:

- Fish exposures to DDT and chlordane in the river have decreased over time;
- Concentrations of DDT and chlordane are 2 to 10 times less for all species in Sylvan Lake;
- All but one fish—the large bullhead catfish in Sylvan Lake—had concentrations of DDT and chlordane well below the PALs;
- A pumpkinseed fish from the background location and two large bullhead catfish from Sylvan Lake had concentrations that exceeded the PAL (10 ppb) for total PAHs; however, the PAH benzo(a)pyrene, which the PAL was based on, was only detected below 1 ppb for all three fish.



- Fish collected from the Sylvan Lake have decreased concentrations from the levels observed in 1992;
- Fish collected from the Cochato River have shown a dramatic decrease in concentrations of DDT and chlordane from previous years.

Figure 4 is an example of the trend in chlordane concentrations in fish at each location over time.

To Sum Up . . .

The 1999 monitoring data tell us that:

- Sediment and river bank soils have improved substantially in the Cochato River since the site and river were cleaned up;
- Sediment concentrations have decreased significantly since completing the clean-up in 1995;

The Good News and the Good News
The good news is that contaminant levels are continuing to decrease along the Cochato River and in the fish that swim in the river and Sylvan Lake. The other good news is that we're not stopping there—we will continue to monitor the river, the lake, and the fish into the foreseeable future to make sure contaminant levels keep decreasing until there is no further threat to human health.

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Or visit the Baird & McGuire Superfund web sites:
<http://www.state.ma.us/dep/bwsc/baird/main.htm>
<http://www.epa.gov/region01/superfund/sites>